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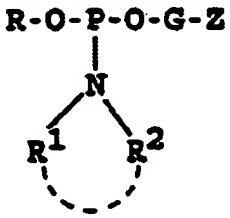

(II)

(57) Abstract

Ph sphoramidites of formula (II) where R is a base-labile protecting group, R^1 and R^2 are individually alkyl of 1 to 6 carbon atoms, cycl alkyl of 3 to 8 carbon atoms, r aryl of 6 to 20 carb n at ms or are joined together to form with the nitrogen at m a cyclic structure of 4-7 carbon atoms and 0 to 1 annular chalcogen at ms of atomic number 8 to 16, G is a hydrocarbylene group f 1 to 20 carbon atoms and Z is a hydroxy-protected vicinal diol group bound to G by one of the vicinal diol carbon atoms r a disulfide group and bound to G by one of the sulfur atoms f the disulfide group, with th proviso that G is of at least 4 carbon atoms when Z is said disulfide group are used in conventional automated oligonucleotide synthesis to introduce a functional aldehyde or thiol group on the 5' end of the oligonucleotide to thereby provide a reactive site on the lig nucleotide that may be used to conjugate the oligonucleotide to molecules that contain a free amino group or an electrophilic center reactive with a thiol group.